Supplement. The detailed procedure of calculating the equivalent MAE for each location.

Sampling site	Methods of b_{abs}	Methods of EC	Reported MAE	Converting factors used in Equation (11)[a]					Equivalent MAE	
				$f_{charring}$	$f_{protocol}$	λ	A	Range of the whole converting factor[b]	Lower	Upper
Group 1										
Philadelphia, PA	Aethalometer	NIOSH (TOT)	16.6	1	1.2~1.5	880	1	0.93~1.16	15.4	19.3
Riverside, CA	Aethalometer	IMPROVE (TOR)	4.4	1.3~1.8	1	880	1	1.81~2.51	7.9	11.0
New York	Aethalometer	NIOSH (TOT)	9.2	1	1.2~1.5	880	1	0.93~1.16	8.6	10.7
Chicago, IL	Aethalometer	IMPROVE (TOR)	4.0	1.3~1.8	1	880	1	1.81~2.51	7.3	10.1
Phoenix, AZ	Aethalometer	IMPROVE (TOR)	3.8	1.3~1.8	1	880	1	1.81~2.51	6.8	9.4
Bakersfield, CA	Aethalometer	IMPROVE (TOR)	3.3	1.3~1.8	1	880	1	1.81~2.51	6.0	8.3
Dallas, TX	Aethalometer	IMPROVE (TOR)	3.3	1.3~1.8	1	880	1	1.81~2.51	5.9	8.2
Philadelphia, PA	Aethalometer	IMPROVE (TOR)	3.3	1.3~1.8	1	880	1	1.81~2.51	5.9	8.2
Uniontown, PA	Aethalometer	IMPROVE (TOR)	5.0	1.3~1.8	1	530	1	1.09~1.51	5.5	7.6
New York	Aethalometer	NIOSH (TOT)	6.4	1	1.2~1.5	880	1	0.93~1.16	6.0	7.5
Evans, Canada	Aethalometer	MSC (TOT)	2.6	(1.3~1.8) × 1.09	1	880	1	1.97~2.73	5.2	7.2
Scotland, UK	Aethalometer	NIOSH (TOT)	6.1	1	1.2~1.5	880	1	0.93~1.16	5.7	7.1
Atlanta, GA	Aethalometer	NIOSH (TOT)	5.7	1	1.2~1.5	880	1	0.93~1.16	5.3	6.6
Toronto, Canada	Aethalometer	NIOSH (TOT)	5.5	1	1.2~1.5	880	1	0.93~1.16	5.1	6.4
Durham, NC	Aethalometer	NIOSH (TOT)	5.4	1	1.2~1.5	880	1	0.93~1.16	5.0	6.3
Egbert, Canada	Aethalometer	IMPROVE (TOR)	2.4	1.3~1.8	1	880	1	1.81~2.51	4.4	6.1
Riverside, CA	Aethalometer	NIOSH (TOT)	5.1	1	1.2~1.5	880	1	0.93~1.16	4.8	6.0
Palmerston, Canada	Aethalometer	MSC (TOT)	2.1	(1.3~1.8) × 1.09	1	880	1	1.97~2.73	4.1	5.7

Group 2

Beijing, China	DRI analyzer	IMPROVE-A (TOT)	9.4	—	—	—	—	—	—	—
Beijing, China	DRI analyzer	IMPROVE-A (TOT)	8.5	—	—	—	—	—	—	—
Lahore, Pakistan	Aethalometer	NIOSH (TOT)	5.8	1	≥1.5	880	2	≤1.29	n.a.	7.5
Lycksele, Sweden	Aethalometer	NIOSH (TOT)	3.7	1	1.2~1.5	880	2	1.29~1.62	4.8	6.0
Manora Peak, India	Sunset analyzer	NIOSH (TOT)	6.9	1	≥1.5	678	2	≤0.77	n.a.	5.3
Mt. Abu, India	Sunset analyzer	NIOSH (TOT)	4.6	1	≥1.5	678	2	≤0.77	n.a.	3.5
Hisar, India	Sunset analyzer	NIOSH (TOT)	3.6	1	≥1.5	678	2	≤0.77	n.a.	2.7
Allahabad, India	Sunset analyzer	NIOSH (TOT)	3.1	1	≥1.5	678	2	≤0.77	n.a.	2.4
Philadelphia, PA	Aethalometer	NIOSH (TOT)	1.6	1	1.2~1.5	880	2	1.29~1.62	2.1	2.6

Note:

[a] The whole converting approach (Equation 11) is: $\text{equivalent MAE} = \text{MAE}_{\lambda} \times \dfrac{f_{charring}}{f_{protocol}} \times \left(\dfrac{\lambda}{632} \right)^{A}$, see text for details.

[b] The whole converting factor indicates $\dfrac{f_{charring}}{f_{protocol}} \times \left(\dfrac{\lambda}{632} \right)^{A}$ in Equation 11.